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Subject: FW: Draft: Water Usage/Replenishment - Rosemont Mine

From: Goldmann, Elizabeth
Sent: Monday, April 18, 2016 11:19 AM
To: Miller, Clay <Miller.Clay@epa.gov>; Landers, Timothy <Landers.Timothy@epa.gov>
Cc: Campbell, Rich <Campbell.Rich@epa.gov>
Subject: Draft: Water Usage/Replenishment - Rosemont Mine

Information on water usage/replenishment for the Rosemont Mine.

This information is based on the FEIS and the most recent mitigation plan dated September 26, 2014. EPA does not have latest information on conservation measures in the B.O. for ESA purposes, since it is not yet final.

- 1) Huidbay currently has an option to purchase 1,122 AFA of water rights from Del Lago for mitigation purposes. These water rights are located approximately 14 miles downstream of the mine at Pantano Dam on Cienega Creek:

The water rights are: 1908 (597.755 AFA) (senior water right)
1933 (477,545 AFA) (junior water right)
1935 (46.455 AFA) (junior water right)

Of these 1,122 AFA of water rights, there is only 360 AFA of "wet water" in the 1908 senior water right. The balance is "paper water." Pima County and researchers anticipate even less "wet water" available in the future due to climate change and drought.

- 2) In addition, Huidbay is purchasing 105,000 AF total of water located in the Santa Cruz Basin in the Town of Sahuarita. This water will be pumped and piped to the mine for mine operations.

Rosemont Copper Project Revised Habitat Mitigation and Monitoring Plan dated September 26, 2014:

- **Pantano Dam In-Lieu Fee project:** RM would like a sponsor to develop a Pantano Dam ILF project. To support this ILF (located downstream of the mine in Cienega Creek), they would allocate **400 AFA** to an ILF sponsor with **186 AFA** being allocated to a Underground Storage Facility in the vicinity. They would also transfer a 2-acre parcel of land located at the dam. In return, RM requests 29.4 acres of credit to compensate for their indirect impacts.
 - ✓ An ILF at Pantano Dam was already evaluated by the Corps and rejected. The existing functional condition of the site did not warrant extensive restoration/enhancement nor was it deemed feasible due to the hydrogeology of the site.
 - ✓ Of the 1,122 AFA of surface water rights, **only 360 AFA consists of wet water**. The wet water is in a declining trend due to climate change and drought.
- ******Only the 1908 water right has "wet water." The rest of the water rights are "paper water" and therefore cannot provide any mitigation to preserve or enhance aquatic resource, fish and wildlife within the Cienega Creek watershed.**
- **RM proposes other conservation measures (not for §404 purposes) with the remaining Surface Water Rights:**

RM will transfer water rights and provide funding for stream renovation and restoration projects to increase water flows and enhance wetlands. These projects will be determined by **BLM and AGFD with input from CNF and USFWS**.

The water rights will be transferred to the state and county as follows: 150 AFA of 1933 junior water right to **AGFD**

water right to **Pima County** 100 AFA of 1933 junior

water right to **AGFD** 46.5 AFA of 1935 junior

- ✓ **There is NO wet water associated with these water rights.** Therefore, it is not feasible to increase water flows nor enhance wetlands with “paper water” rights.
 - ✓ These water rights and funding are not for §404 CWA purposes.
 - ✓ The funding in the amount of \$2,000,000 is for a conservation fund providing \$200,000 for 10 years to **Arizona Game and Fish Department**.
 - ✓ Funding will also be directed to fund conservation projects for endangered species (e.g., species surveys, removal of nonnative species).
- Once the water rights are purchased by RM, these water rights must then be severed and RM must transfer the diversion and beneficial use to a Cienega Creek Watershed location as determined by the receiving entity. The severance and transfer is subject to approval of the AZ Dept. of Water Resources (ADWR). It takes a minimum of two years for the review process. It is also possible that irrigation districts and other water holders will object to the application. This can result in a delay of the process or could cause ADWR to deny the application.

Can pit water be used to replenish downstream waters diverted by the Rosemont Mine?

- ✓ Pit water is being used by RM for mine operation.
- ✓ If released, pit water would degrade downstream waters in violation of water quality standards.
- ✓ Released pit water would require compliance under §402 CWA
- ✓ Pit water releases cannot mimic the episodic nature of storm events in the Cienega Creek Watershed.

Water Use for the Operation of the Rosemont Mine:

- Most of the water used at the mine operation is used for ore processing, with much smaller amounts employed for activities such as dust control and fire protection. In addition to mine pit water, the project would use approximately 5,000 AFY of fresh water during operations. The water would be pumped from 4-6 wells located on land owned or leased by RM near the community of Sahuarita in the Santa Cruz Valley and would be piped to the mine. A smaller amount of water would be obtained from stormwater from the mine pit and pit dewatering at the mine site.
- ✓ **Upper Santa Cruz subbasin.** It is estimated that water supply pumping for the mine over the 20-year active mine period will result in an increase in the rate of groundwater drawdown to a total decrease of 5 to 8 feet in groundwater levels per year. This represents a 6 to 7% increase over the current pumpage demand. With the Upper Santa Cruz Subbasin already in decline, pumping of water from the regional aquifer for the operation of the proposed mine would lower groundwater levels, which would reduce groundwater availability to existing wells and water users. As a result of pumping water supply for the mine, an estimated 500-550 private and municipal wells would be significantly impacted by drawdown in groundwater levels. Groundwater-level drawdown is estimated to be as great as 90 feet immediately adjacent to the pumping locations and 10 feet or less approximately 3-4 miles (42 square miles) from the Rosemont Copper properties.

- ✓ **Davidson Canyon/Cienega basin.** The watershed where the Rosemont Mine is located provides 20% of the groundwater recharge in the Tucson basin. According to the FEIS, the mine pit would create a permanent drawdown of the water table. During active mining, groundwater would be pumped directly from the mine pit or from dewatering wells next to the mine pit. After closure, the pit will gradually fill with groundwater, forming a mine pit lake. The mine pit lake is expected to act as a permanent regional hydraulic sink, resulting in long-term impact on groundwater hydrology in the vicinity of the mine. During active mining, estimates of pit dewatering are as high as 650 gallons per minute, resulting in approximately 13,000 – 18,500 acre-feet of water removed from the aquifer. Groundwater drawdown from the mine's pit within the Davidson Canyon/Cienega Basin, would significantly impact an estimated 360-370 well owners with water level declines over 10 feet.
- ✓ **Water quality impacts from groundwater depletion in wells.** In addition to a reduction in water quantity for well owners and users, groundwater depletion in wells may adversely impact water quality. Withdrawal of good quality water from the upper parts of inland aquifers can allow underlying natural or manmade pollutants to concentrate in the remaining groundwater degrading water quality.

Mitigation Proposed by Rosemont Copper Will Not Offset Significant Adverse Impact to Municipal and Private Water Supplies:

To address the impacts from groundwater drawdown in the Upper Santa Cruz Basin from the mine, Rosemont proposes measures to mitigate impacts to well owners and the aquifer of the AMA, but these measures will not offset significant impact to quantity and quality of private and public water supplies.

- ✓ **Groundwater Recharge.** Rosemont Copper has committed to recharging 105 percent of water pumped from the Santa Cruz Basin (105,000 acre feet). As of 2009, 45,000 acre-feet have been recharged by Rosemont Copper, yet only 600 acre feet of that total have been recharged within the Upper Santa Cruz Subbasin where impacts to private well owners will occur. Given the uncertain location where water would be recharged in the future, it is unknown whether actual drawdown in the Upper Santa Cruz Subbasin would be offset. Also, groundwater recharge is a voluntary measure and given the likely water shortages in the Colorado River over the next few decades, it is unlikely Rosemont Copper will be able to meet their commitment to recharge with excess water from CAP. Under shortage conditions, CAP is subject to reductions in Colorado River water. If necessary, excess water deliveries, such as those utilized by Rosemont Copper would be reduced and portions of CAP recharge operations would cease. If further reductions are required, CAP would even recover water stored to meet Arizona's obligations.
- ✓ **Residential Well Protection Program.** Rosemont Copper offered a voluntary Well Protection Program for private residential well owners against the risk of mine-associated groundwater drawdown. These agreements were offered to well owners in "well protection areas" identified by Rosemont Copper that may be subject to well draw down from operation of the proposed mine. The program is two-fold: 1) a pump warranty program for well components; and 2) a water well deepening program to deepen a well that has failed. An In Lieu Cash payment of \$5000.00 and \$15,000.00, respectively, is also offered. Pump damage or well depletion is determined solely by Rosemont. The length of the warranty is unclear. Property owners have voiced concerns to EPA regarding the threat to a clean and reliable water source, and economic hardship should the mine be constructed.

Groundwater Recharge. Rosemont Copper has committed to recharging 105 percent of water pumped from the Santa Cruz Basin (105,000 acre feet).^[1] As of 2009, 45,000 acre-feet have been recharged by Rosemont Copper, yet only 600

^[1] This is a voluntary measure in a License for Right-of-way Encroachment agreement with the Town of Sahuarita. Recharging would be based on "available" CAP water. FEIS, p. 360.

acre feet of that total have been recharged within the Upper Santa Cruz Subbasin where impacts to private well owners will occur. Given the uncertain location where water would be recharged in the future, it is unknown whether actual drawdown in the Upper Santa Cruz Subbasin would be offset.^[2] Also, groundwater recharge is a voluntary measure and given the likely water shortages in the Colorado River over the next few decades, it is unlikely Rosemont Copper will be able to meet their commitment to recharge with excess water from CAP. Under shortage conditions, CAP is subject to reductions in Colorado River water.^[3] If necessary, excess water deliveries, such as those utilized by Rosemont Copper would be reduced and portions of CAP recharge operations would cease. If further reductions are required, CAP would even recover water stored to meet Arizona's obligations.^[4]

The adverse effect of the Rosemont Mine on private and municipal water supplies is significant. Groundwater pumping for the mine will reduce available groundwater supply, possibly degrade water quality and cause significant economic hardship for private and municipal water users. Voluntary measures proposed by Rosemont to mitigate for impacts to water supplies are unreliable and unenforceable and will not offset the significant impacts to water users in the AMA.

^[1] This is a voluntary measure in a License for Right-of-way Encroachment agreement with the Town of Sahuarita. Recharging would be based on "available" CAP water. FEIS, p. 360.

² FEIS, p. 360.

³ *Central Arizona Project Issue Brief Strategic Initiatives and Public Policy* dated October, 2014.

⁴ <http://www.cap-az.com/documents/public-information/Shortage-Issue-Brief.pdf> and <http://www.azwater.gov/azdwr/ColoradoRiverShortagePreparedness.htm>

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^[2] FEIS, p. 360.

^[3] *Central Arizona Project Issue Brief Strategic Initiatives and Public Policy* dated October, 2014.

^[4] <http://www.cap-az.com/documents/public-information/Shortage-Issue-Brief.pdf> and <http://www.azwater.gov/azdwr/ColoradoRiverShortagePreparedness.htm>